

Worlds apart

Examining trends in disparity in
property prices in the city of Prague

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PRAGUE
CZECH REPUBLIC



Introduction

- › Districts within a city differ and “rich” and “poor” city districts can be found in almost all cities around the world
- › Differences between city parts are larger or smaller in various cities
- › How do we measure the disparity?
- › How do we examine the historical and recent trends?

Methodology

- › We use asking prices per square meter in 46 districts of Prague
- › We explore three data points of property prices in the district of Prague – November 2003, November 2008 and November 2012
- › An obstacle – the pricing of properties in individual districts is mainly influenced by its distance from the city center, which disturbs meaningful analysis.
- › Considering urban model introduced by William Alonso, we stipulate

$$(1) \quad p = y - t x$$

- › For our analysis, we however replace the y and t with empirically found constants

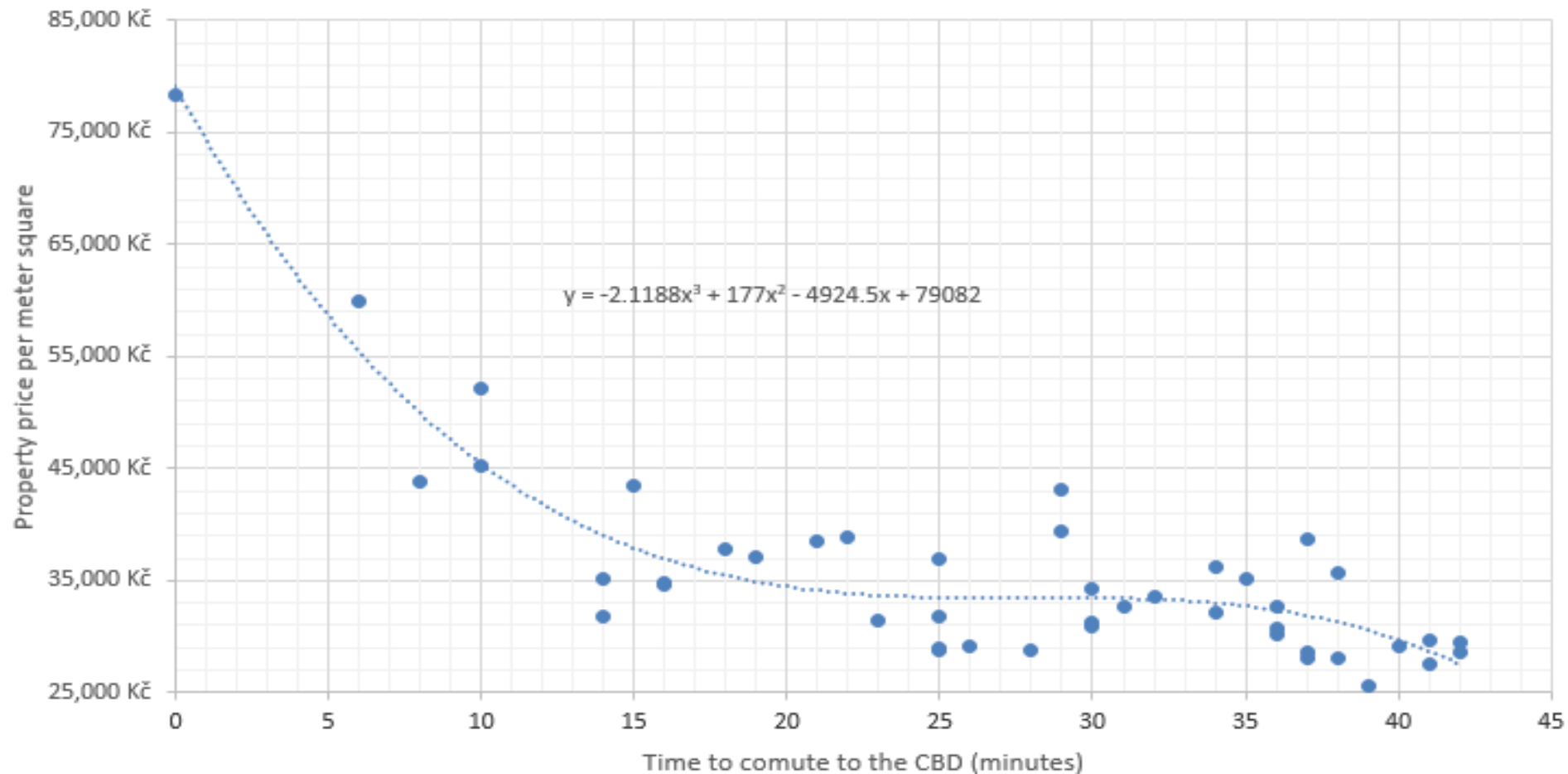
$$(2) \quad p = a - bx - cx^2 - dx^3$$

Methodology

- › We use the empirically found equation (2) as a base from “cleaning” the data from the influence from CBD
- › For the distance from CBD we collected data from Google Maps, in minutes from each city districts to the CBD (chosen as the Metro station in central Prague with the highest number of commuters)
- › With the adjusted data-set, we calculate standard deviation and sample variance, as the parameters of choice, the best expression of change in disparity between city districts.

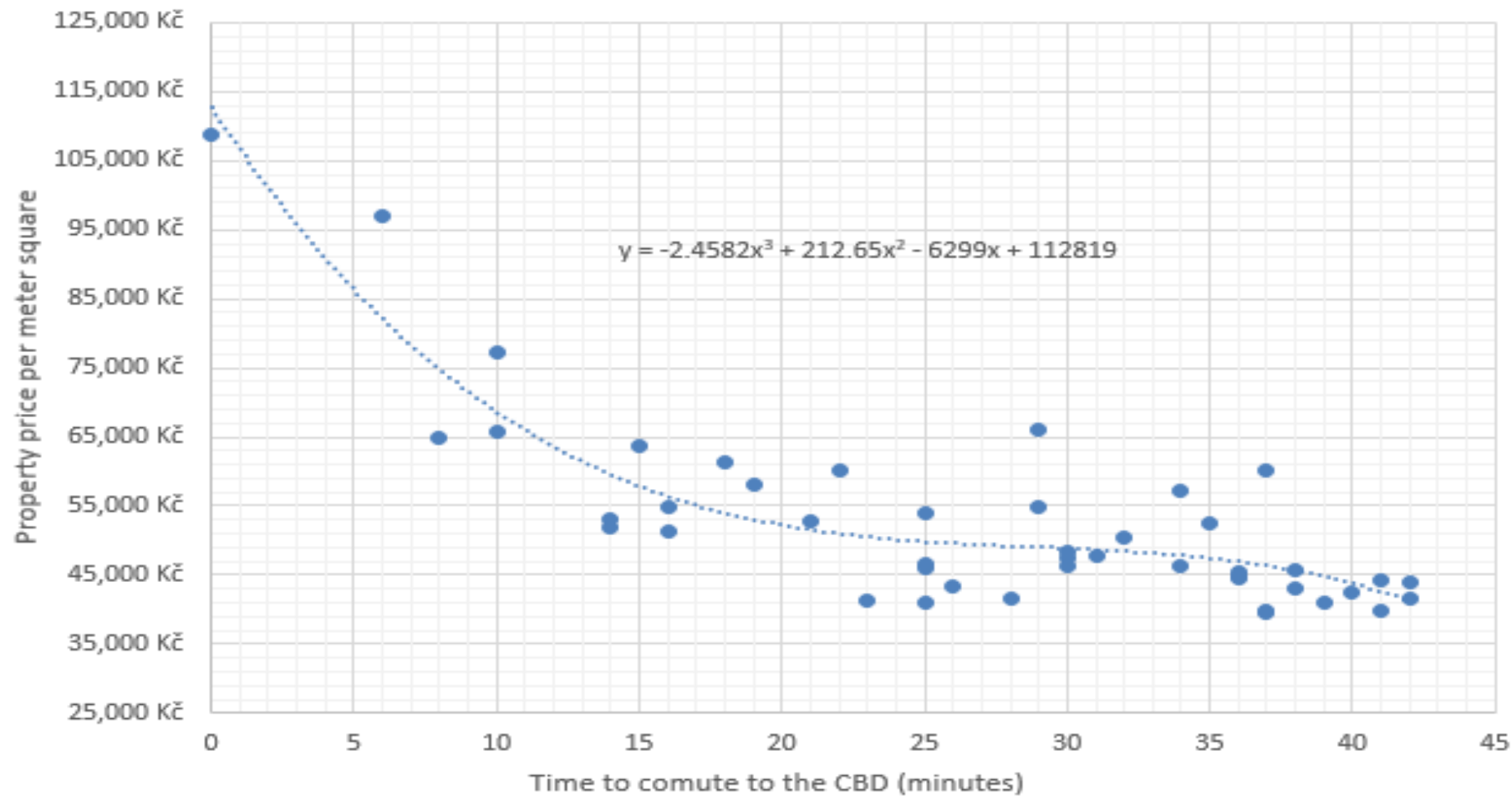
Property prices in city districts of Prague

November 2003



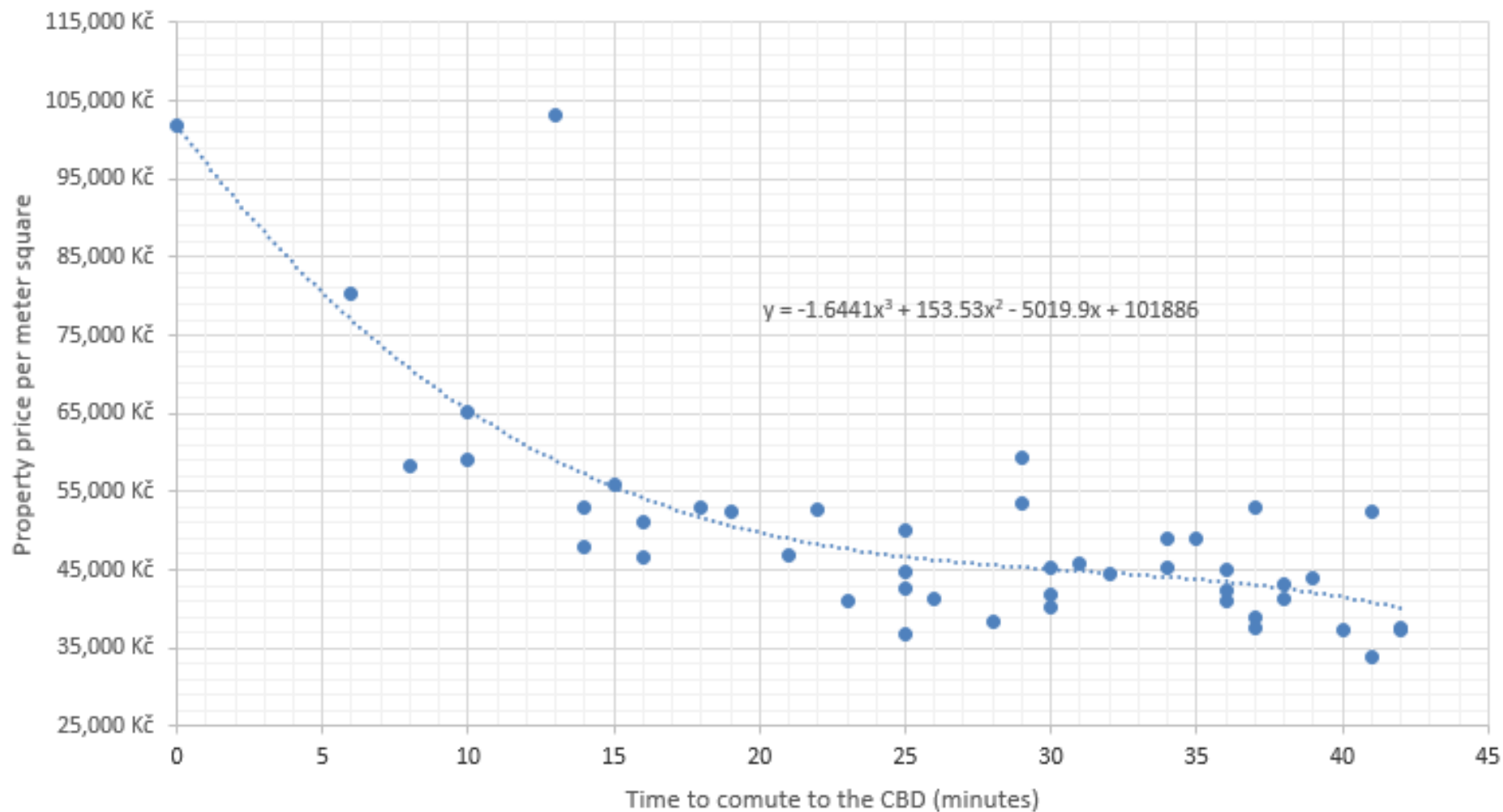
Property prices in city districts of Prague

November 2008



Property prices in city districts of Prague

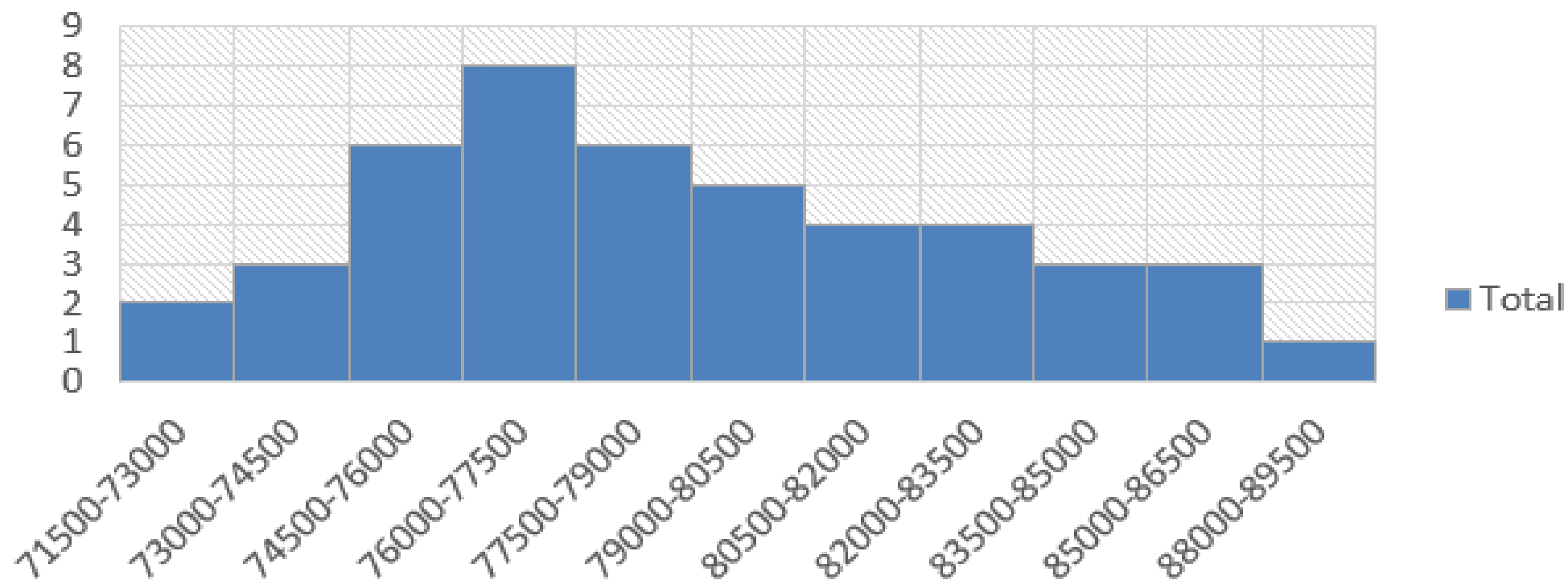
November 2012



Property prices in city districts of Prague

Count of Corrected 11/2003

November 2003

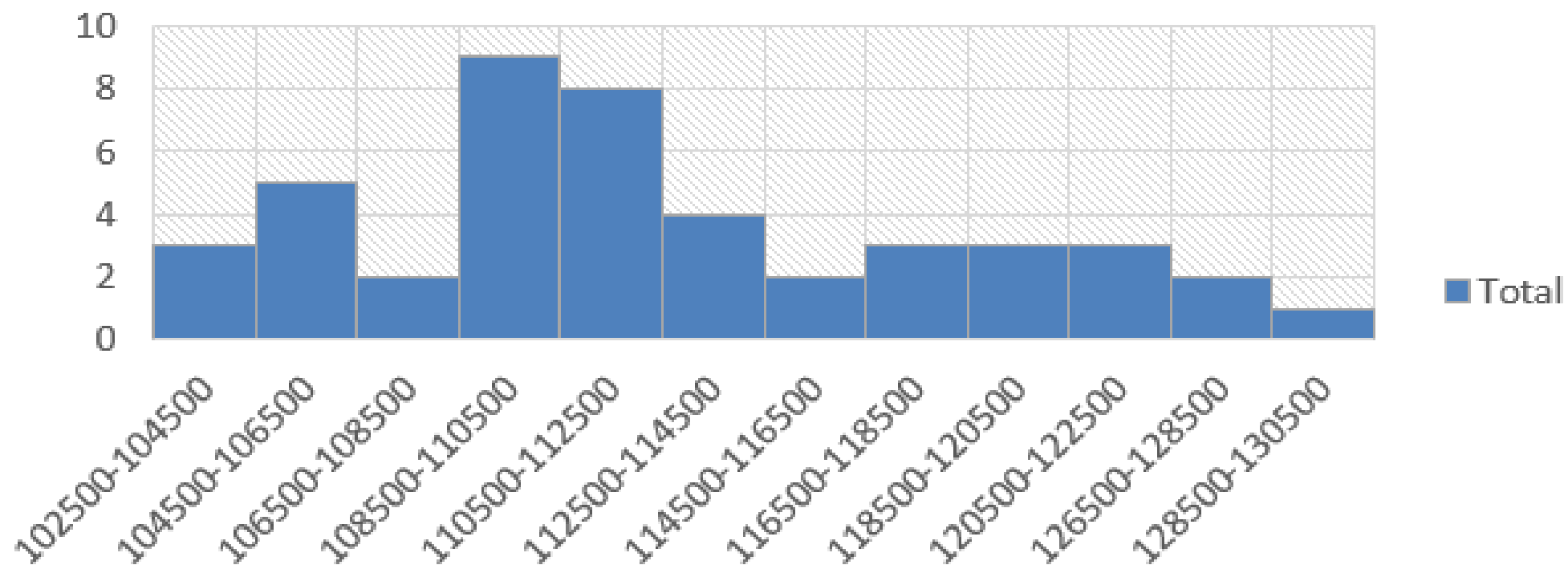


Corrected 11/2003

Property prices in city districts of Prague

Count of Corrected 11/2008

November 2008

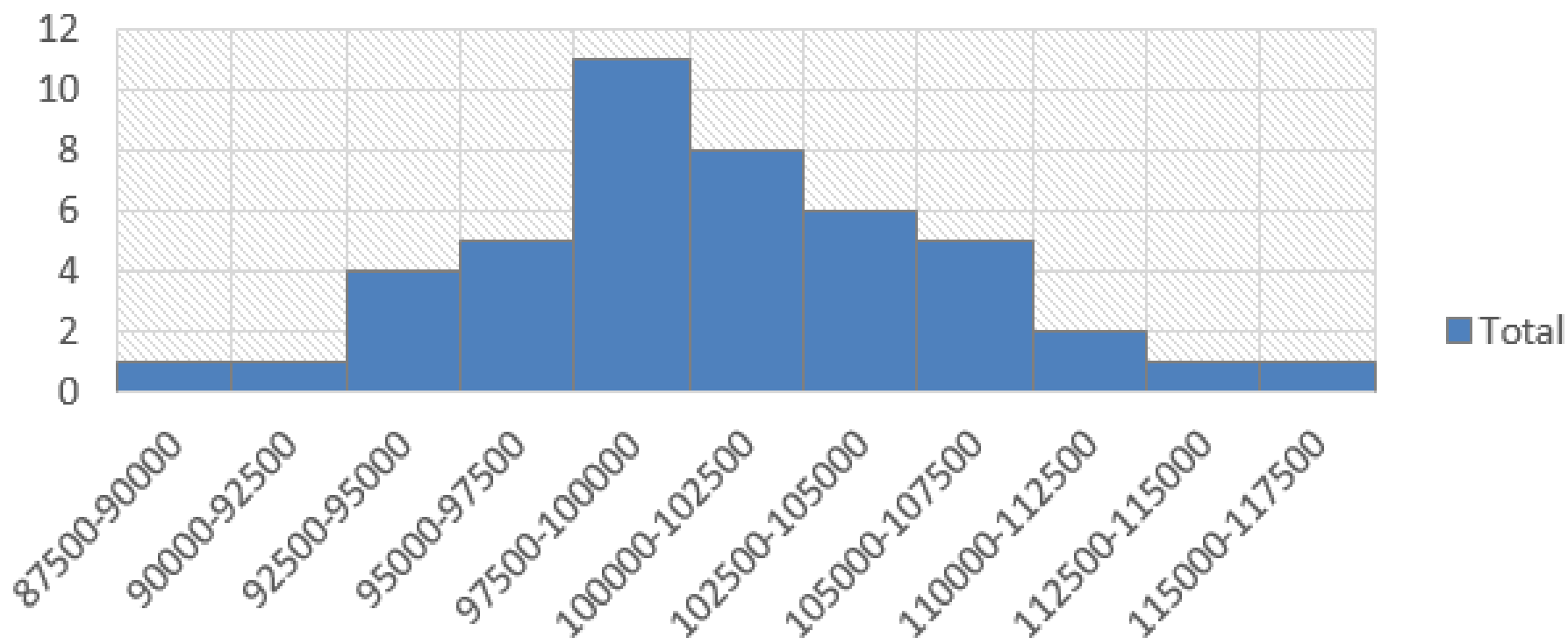


Corrected 11/2008

Property prices in city districts of Prague

Count of Corrected 11/2012

November 2012



Corrected 11/2012

Statistical analysis of the collected sample

| | Corrected 11/2012 | Corrected 11/2008 | Corrected 11/2003 |
|--------------------|-------------------|-------------------|-------------------|
| Mean | 100906.3072 | 112820.4518 | 79087.35628 |
| Standard Error | 823.4635695 | 958.9997573 | 580.6380362 |
| Median | 100599.9352 | 111326.4 | 78432.2 |
| Standard Deviation | 5523.961555 | 6433.165943 | 3895.038358 |
| Sample Variance | 30514151.26 | 41385624.06 | 15171323.81 |
| Kurtosis | 0.654172349 | 0.327765128 | -0.415964551 |
| Skewness | 0.589273345 | 0.825966316 | 0.412712747 |
| Range | 26449.2657 | 26837.3914 | 17001.926 |
| Minimum | 89502.0592 | 102978.9984 | 71780.9872 |
| Maximum | 115951.3249 | 129816.3898 | 88782.9132 |
| Sum | 4540783.825 | 5076920.329 | 3558931.033 |
| Count | 45 | 45 | 45 |

Conclusion

- › Relative difference between property prices rose sharply during the first period between 2003 to 2008
- › Standard deviation of the property prices per square meter, from CZK 3895.04 to CZK 6433.17, increase in this disparity by 65.16%.
- › Between 2008 and 2012, the disparity decreased from CZK 6433.17 to CZK 5523.96, a decrease of 14.13%
- › This trend coincided with the Czech business cycle.